

MERLE CRAWFORD ANTHONY DI BENEDETTO

PHASE 1
Opportunity
Identification
and Selection

PHASE 2
Concept
Development

PHASE 3
Concept/Prototype
Evaluation

NEW PRODUCTS MANAGEMENT

PHASE 4
Launch

PHASE 5
Development

Marketing Tools

Technical Tools

water

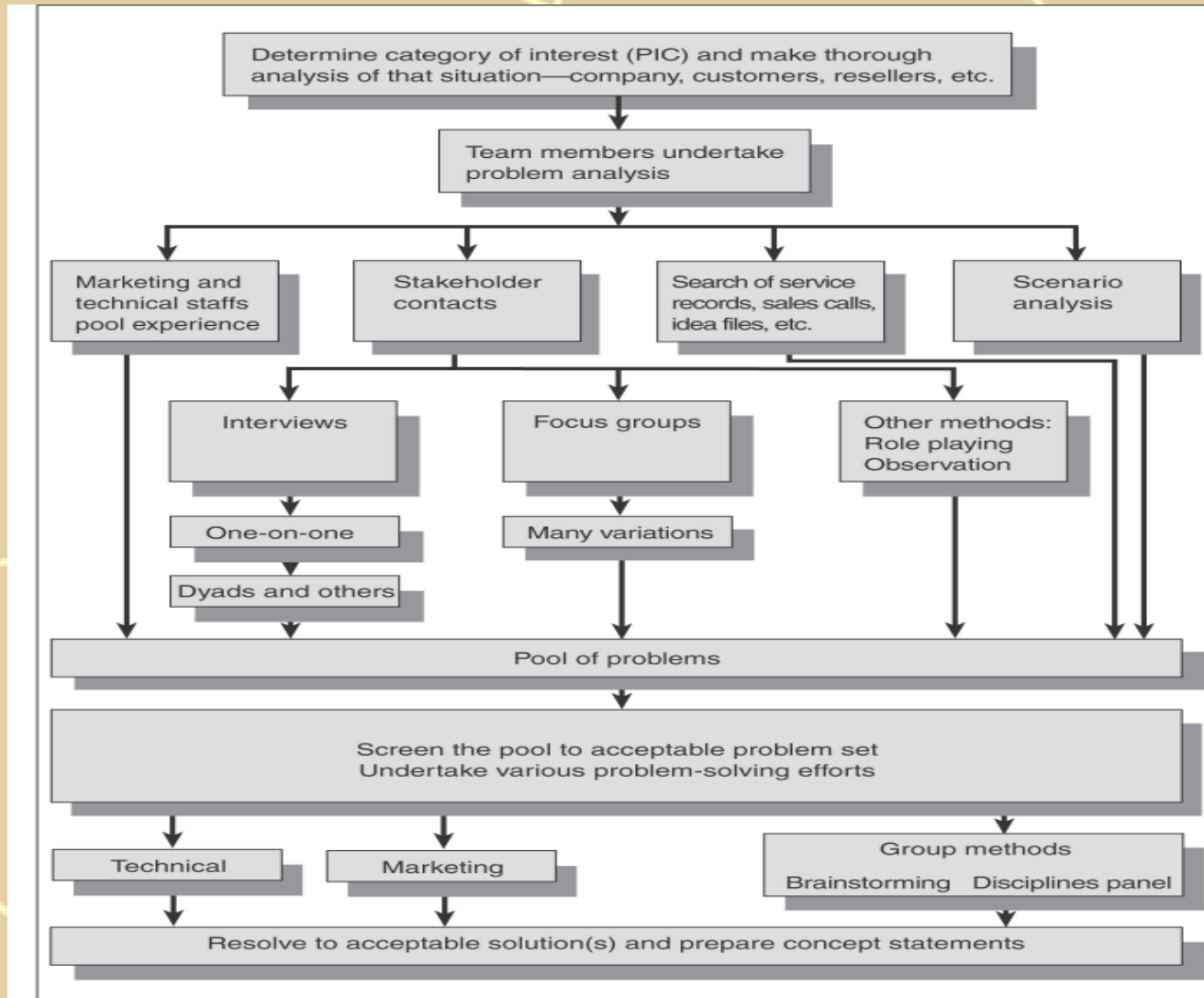
NINTH EDITION

Chapter 5

Problem-Based Ideation: Finding and Solving Customers' Problems

Problem-Based Concept Generation

Figure 5.1



Problem Analysis: General Procedure

1. Determine product or activity category for study.
2. Identify heavy users.
3. Gather set of problems associated with product category.
4. Sort and rank the problems according to severity or importance.

Problem Analysis Applied to the Cell Phone

Figure
5.2

- Keeping the unit clean.
- Breaks when I drop it.
- Battery doesn't stay charged long enough.
- Finding it in dark.
- Battery dies in mid-conversation.
- Who "out there" hears me?
- Dropped calls.
- Looking up numbers.
- Voice fades in and out.
- Hard to hold.
- Health risks?
- Can't cradle between ear and shoulder.
- Antenna breaks off.
- Flip cover breaks off.
- Disruptive instrument.
- Can't see facial/body language.
- Rings too loud/too soft.
- Wrong numbers.
- Fear of what ringing might be for.

Problem Analysis: Sources and Methodologies

- Experts
- Published Sources
- Contacts with Your Business Customers or Consumers
 - Interviewing
 - Focus groups
 - Observation of product in use
 - Role playing

Typical Questions for Problem Analysis Focus Groups

- What is the real problem here – what if the product category did not exist?
- What are current attitudes and behaviors of focus group members toward the product category?
- What product attributes and benefits do the focus group members want?
- What are their dissatisfactions, problems, and unfilled needs?
- What changes occurring in their lifestyles are relevant to the product category?

Observation and Role Playing in Problem Analysis

- Carmakers send their designers out to parking lots to watch people and how they interact with their cars (Ford called this “gorilla research”).
- Honda got insights as to how large the passenger compartments of their SUVs should be by observing U.S. families.

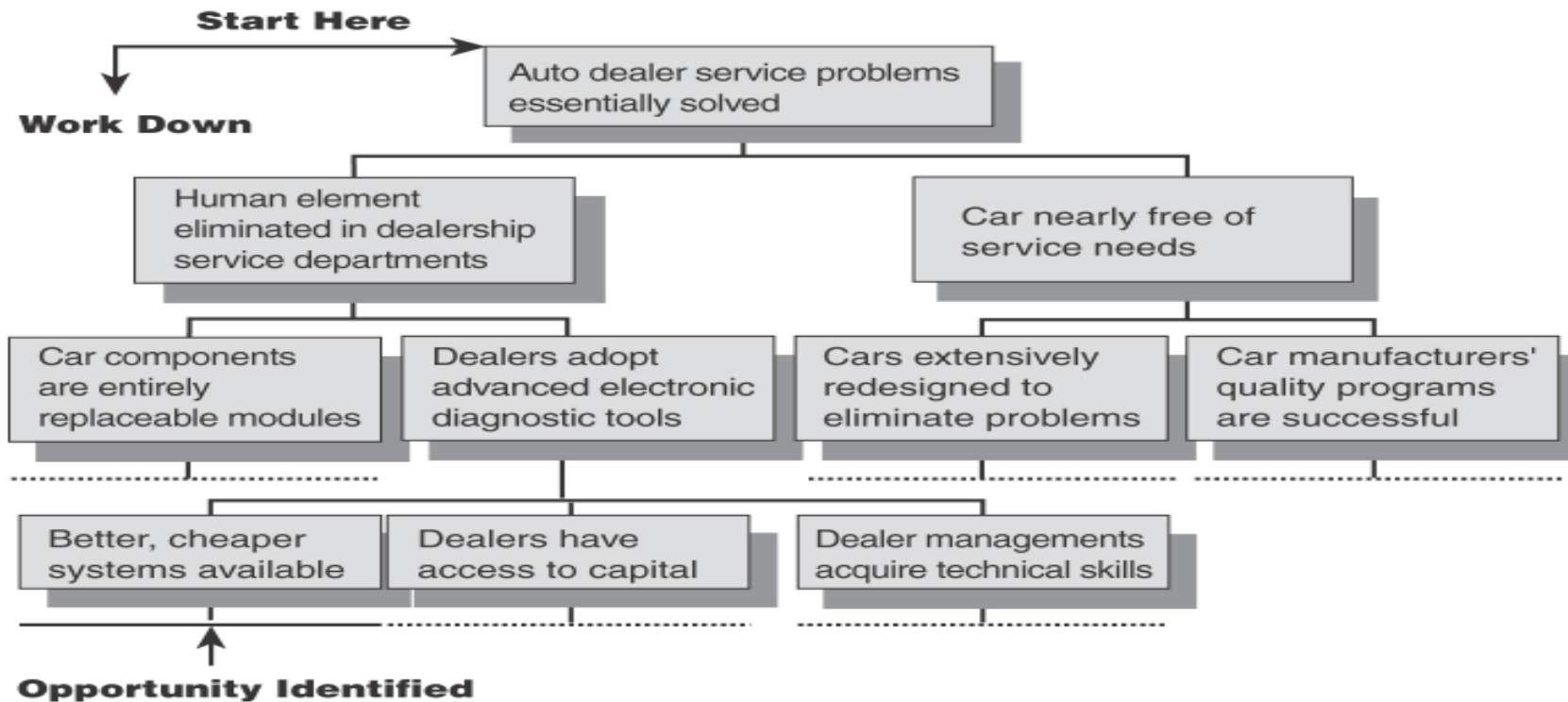
Scenario Analysis

- Extending The present to see what it will look like in the future.
- Leaping: Into the future to pike a period.
- Leap studies: static or dynamic

Relevance Tree Form of Dynamic Leap Scenario

Figure 5.4

The analysis begins at the top of the chart (the ideal future condition that is the expected end). Working down the page, each level shows the necessary conditions for the item above it. All branches of the Relevance Tree are worked down to the conditions that already exist. Somewhere in the analysis, on one of the branches, a condition that does not exist offers someone today an opportunity for product innovation. In this diagram, with only a few of the branches completed, there appears to be an opportunity for some firm to develop better, cheaper diagnostic systems for dealers to use. (The analysis is for demonstration only.)



Guidelines for conducting a good scenario analysis

Figure
5.6

- Know the now:
- Keep it simple:
- Be careful with selecting group members
- Do an 8 to 10 year projection
- Periodically summarize progress
- Combine the factors causing changes
- Check fit
- Plan to use several times
- Reuse the group

Solving the Problem

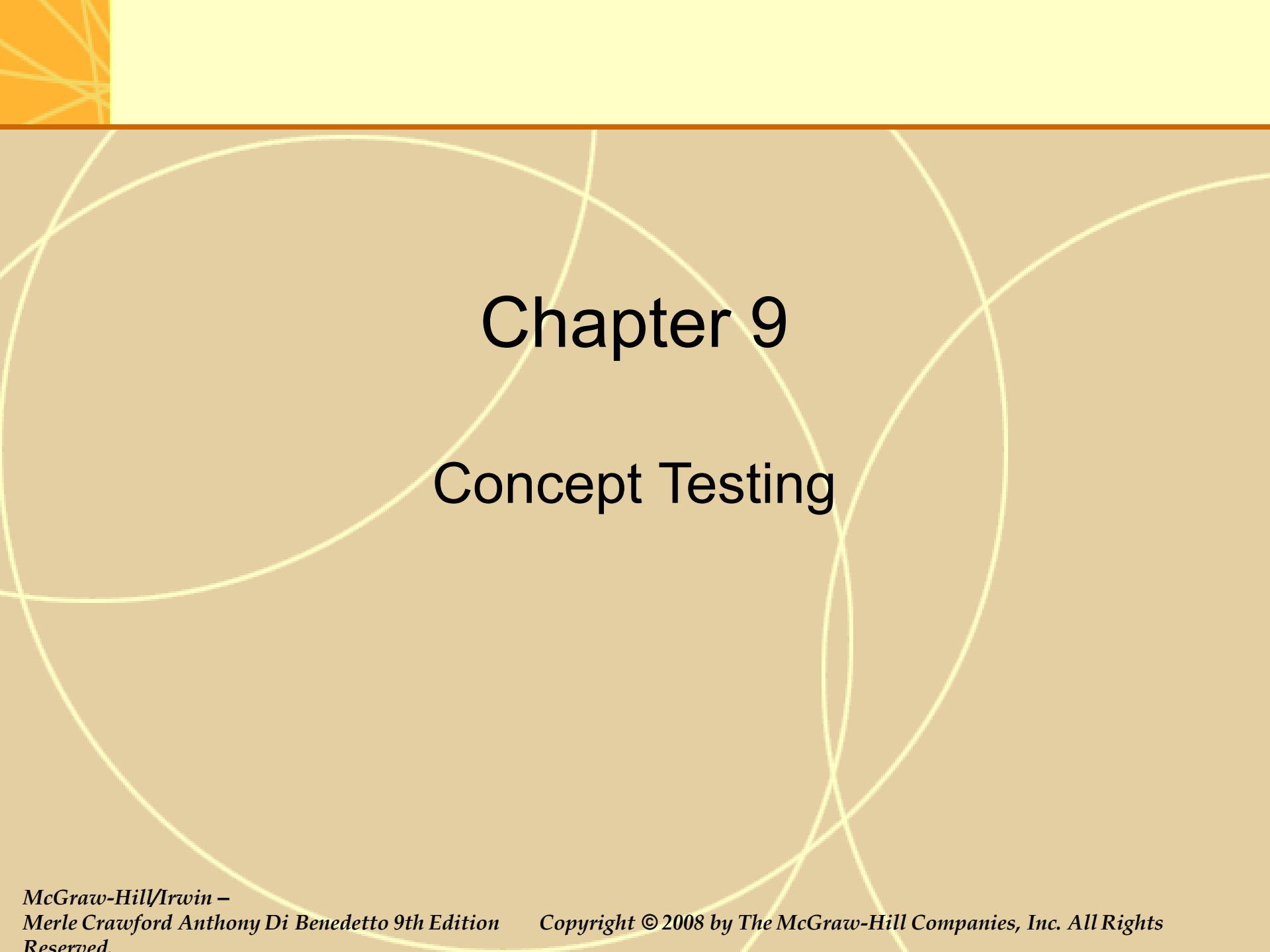
- Group Creativity Methods/Brainstorming
- Principles of Brainstorming:
 - Deferral of Judgment
 - Quantity Breeds Quality
- Rules for a Brainstorming Session:
 - No criticism allowed.
 - Freewheeling -- the wilder the better.
 - Nothing should slow the session down.
 - Combination and improvement of ideas.

Brainstorming Techniques

- Brainstorming circle
- Reverse brainstorming
- Tear-down
- Phillips 66 groups (buzz groups)
- Delphi method

Electronic Brainstorming

- Supported by GSS (group support systems) software.
- Overcomes many drawbacks of brainstorming (only one can talk at a time, fear of contributing, “social loafing”).
- Participants sit at networked terminals.
- Contributions are projected on screen, and also recorded (so no errors are made in transcription).
- Can be done over multiple sites via computer linkups or videoconferencing.
- Can handle larger size groups (into the hundreds).

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Chapter 9

Concept Testing

Many Ideas Are Eliminated Before Concept Testing

- PIC eliminates most new product ideas even before they are developed into concepts.
- Ideas of the following types are excluded:
 - Ideas requiring technologies the firm does not have.
 - Ideas to be sold to customers about whom the firm has no close knowledge.
 - Ideas that offer too much (or too little) innovativeness.
 - Ideas wrong on other dimensions: not low cost, too close to certain competitors, etc.

Market Analysis and Initial Reaction

- Market analysis: in-depth study of market area that the PIC has selected for focus.
 - Conducted immediately after PIC approval.
- Initial reaction: preliminary, inexpensive assessment of concepts, which may be flowing very quickly at this point.
 - Avoid “bazooka effect” (quickly blasting out concepts without forethought)
 - Do not include idea source in initial reaction.
 - Respect the “fragility of ideas” -- have more than a single person involved.
 - Use more than pure intuition -- keep records and stay objective.

Suggested Questions for the Initial Reaction

- *Market Worth:* what is the attractiveness of the new product to the targeted customer population?
- *Firm Worth:* Is the new product project viewed positively by management? Does this new product project enhance the firm's competencies?
- *Competitive Insulation:* Can the product's advantage be maintained against competitive retaliation?

Concept Testing Cautions and Concerns

- If the prime benefit is a personal sense (aroma, taste).
- If the concept involves new art and entertainment.
- If the concept embodies a new technology that users cannot visualize.
- If concept testing is mishandled by management, then blamed for product failure.
- If customers simply do not know what problems they have.

What Is a Product Concept Statement?

- A statement about anticipated product features (form or technology) that will yield selected benefits relative to other products or problem solutions already available.
- Example: “A new electric razor whose screen is so thin it can cut closer than any other electric razor on the market.”
- Recall the importance of getting responses to product concepts and not simply ideas.

Purposes of Concept Testing

- To identify very poor concepts so that they can be eliminated.
- To estimate (at least crudely) the sales or trial rate the product would enjoy (buying intentions, early projection of market share).
- To help develop the idea (e.g. make tradeoffs among attributes).

Procedure for a Concept Test

- Prepare concept statement
- Clarify specific purposes
- Decide format(s)
- Select commercialization
- Determine price(s)
- Select respondent type(s)
- Select response situation
- Define the interview
- Conduct trial interviews
- Interview, tabulate, analyze

Some Key Issues in Concept Testing

- Concept statement: narrative, drawing, model?
- Respondent group: Lead users? Large users?
- Response situation: Where? How?
- Interviewing sequence: Believable? Important? Interesting? Would it work? What problems do they see? Would they buy?
- Test procedure, change and implement, study findings.

Mail Concept Test -- Verbal Description

Figure

9.1

Here is a tasty, sparkling beverage that quenches thirst, refreshes, and makes the mouth tingle with a delightful flavor blend of orange, mint, and lime.

It helps adults (and kids too) control weight by reducing the craving for sweets and between-meal snacks. And, best of all, it contains absolutely no calories.

Comes in 12-ounce cans or bottles and costs 60 cents each.

1. How different, if at all, do you think this diet soft drink would be from other available products now on the market that might be compared with it?

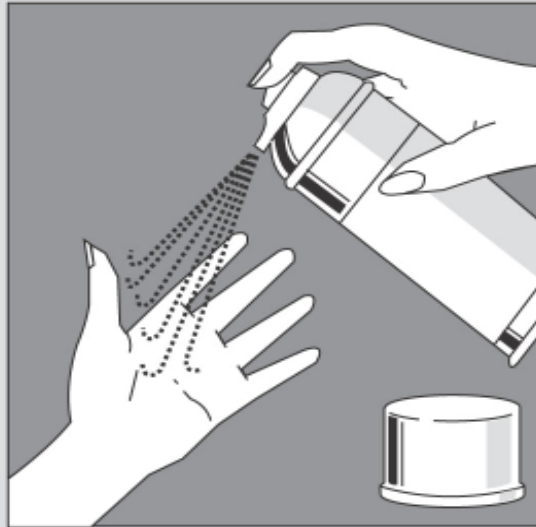
Very different () () () () Not at all different

2. Assuming you tried the product described above and liked it, about how often do you think you would buy it?

More than once a week () () () () () () Would never buy it

Mail Concept Test -- Sketch

Figure
9.2



Aerosol Hand Cleanser

A large-size can of hand cleanser concentrate that completely eliminates those lingering unpleasant odors that come from handling fish, onions, garlic, furniture polish, etc. Not a covering odor! Just press the button and spray directly on the hands, rub for a few seconds, and rinse off under the faucet. 24-ounce aerosol can will last for months and can be easily stored. Costs \$2.25.

1. How interested would you be in buying the product described above if it were available at your supermarket?

| | Check one | Responses in sample (%) |
|----------------------------|--------------------------|----------------------------|
| I would definitely buy | <input type="checkbox"/> | 5% |
| I would probably buy | <input type="checkbox"/> | 36% |
| I might or might not buy | <input type="checkbox"/> | 33% |
| I would probably not buy | <input type="checkbox"/> | 16% |
| I would definitely not buy | <input type="checkbox"/> | 10% |
| | | <hr/> 100% Total |

Benefit Segmentation in Swimsuit Market

Figure
9.3



Joint Space Map Showing Ideal Points

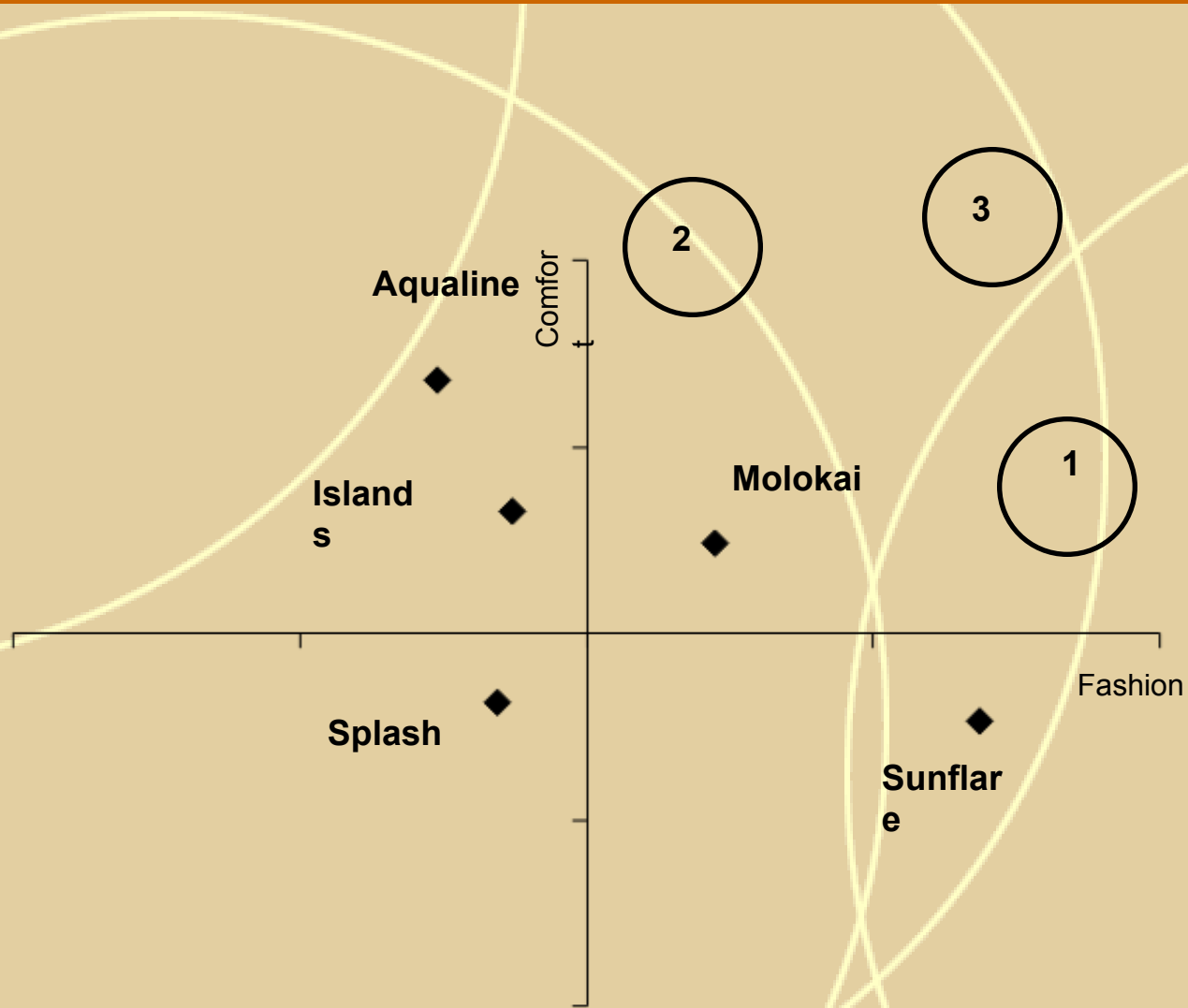
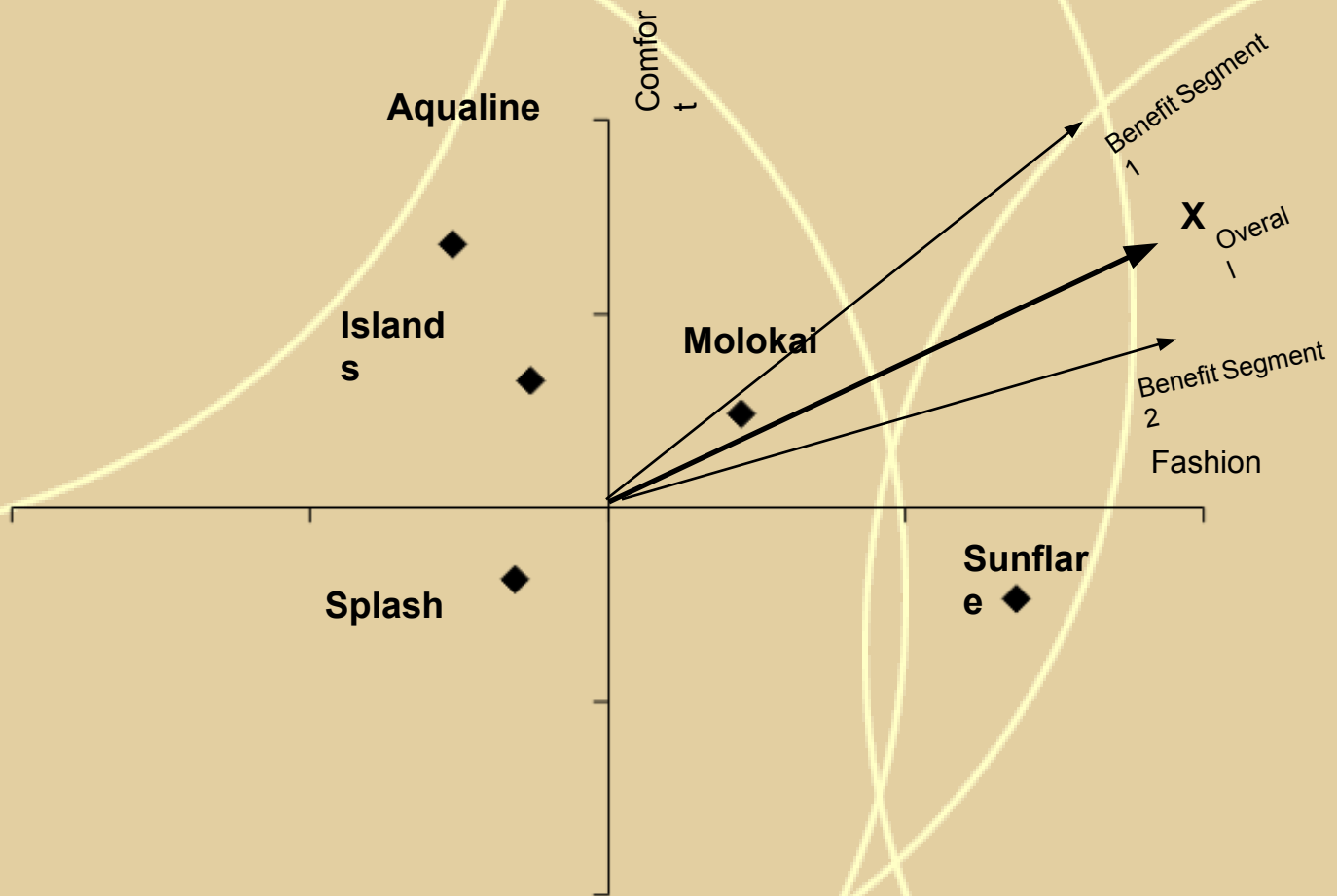


Figure
9.4

Joint Space Map Showing Ideal Vectors

Figure 9.5



Conjoint Analysis in Concept Testing: EZPass

- Key attributes: number of accounts to open, how to apply and pay for an account, number of EZPass lanes at each toll plaza, etc.
- 11-minute video of product in action and its effectiveness in reducing congestion.
- Respondents all received the video, a questionnaire, and scenario cards showing combinations of attributes.

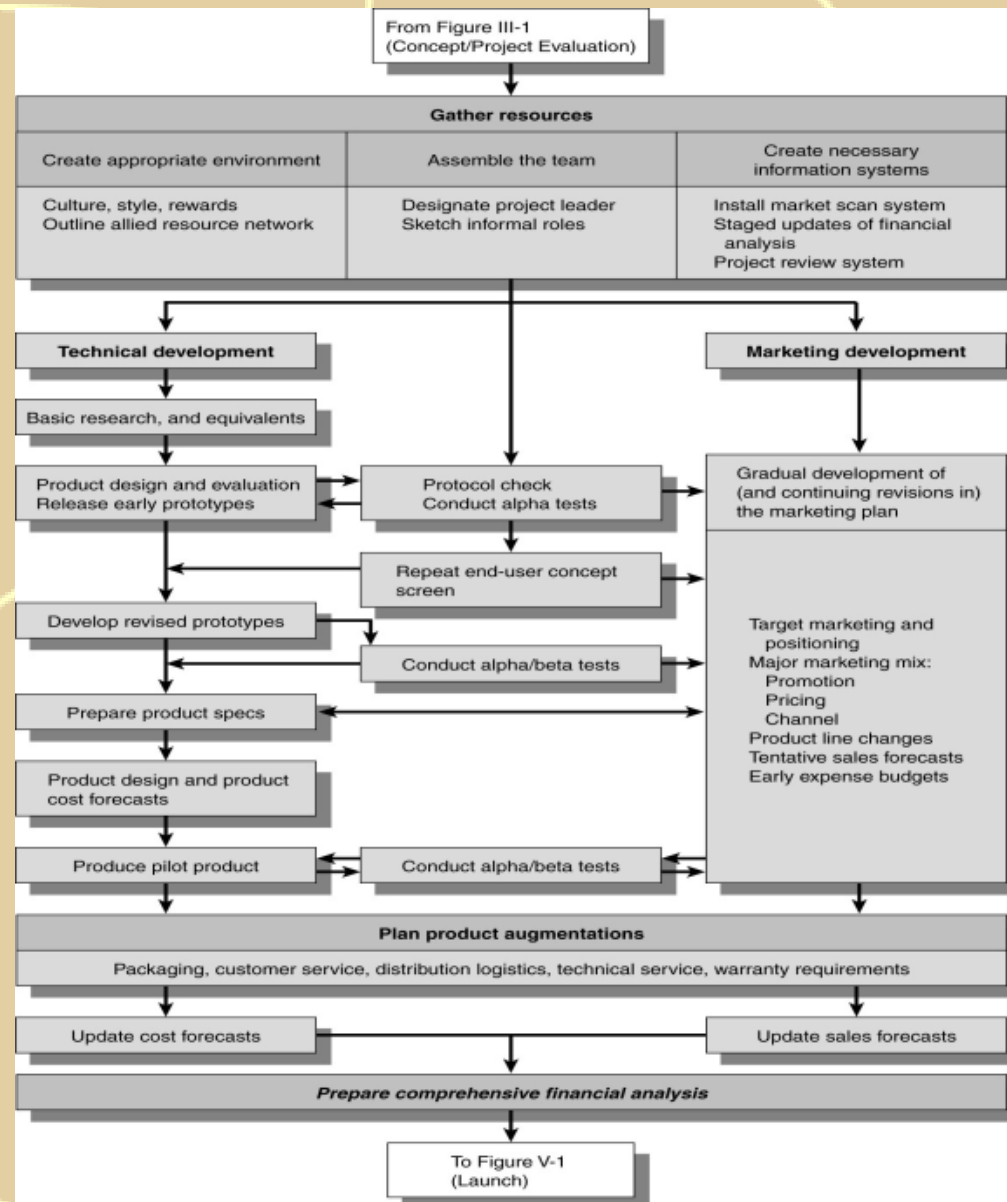


PART FOUR

DEVELOPMENT

Development

Figure IV.1



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Chapter 13

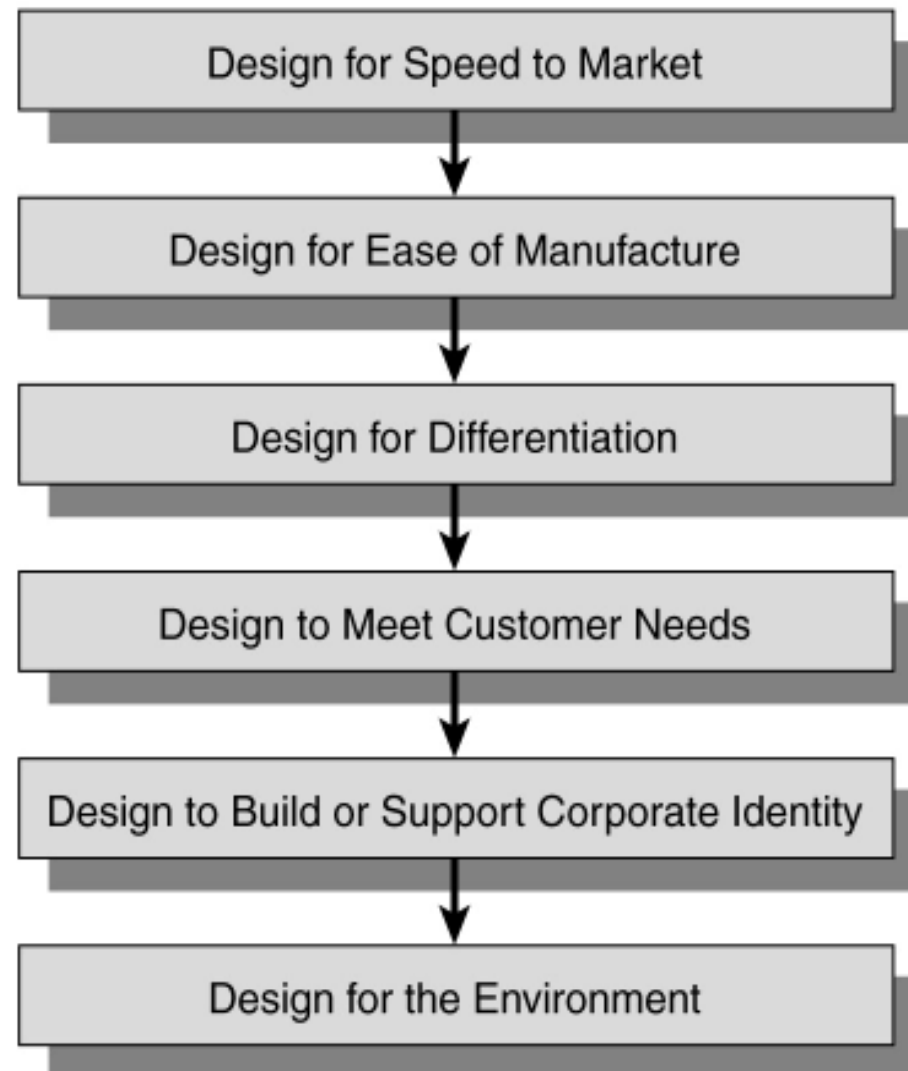
Design

What Is Design?

- Has been defined as “the synthesis of technology and human needs into manufacturable products.”
- In practice, design can mean many things, ranging from styling to setting final product specifications.
- Design has been successfully used in a variety of ways to help achieve new product objectives.

Contributions of Design to the New Products Process

Figure
13.1



Principles of Universal Design

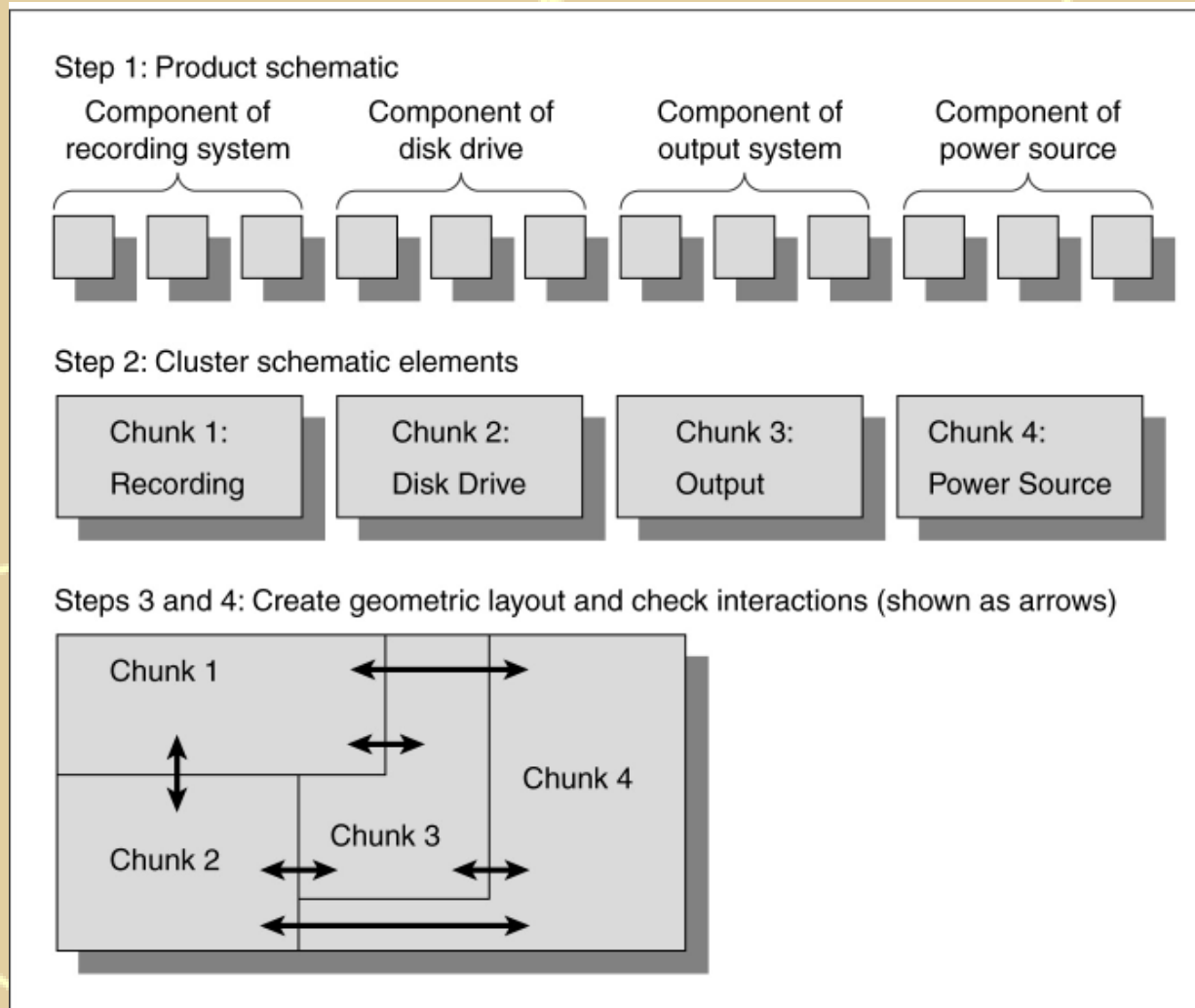
- *Equitable Use:* The design is useful to people with varied abilities.
- *Flexibility in Use:* The design accommodates a wide variety of preferences.
- *Simple to Use:* The design is easy for anyone to understand.
- *Perceptible Information:* The design communicates the required information to the user.
- *Tolerance for Error:* The design minimizes adverse consequences of inappropriate use.
- *Low Physical Effort:* The design can be used efficiently by anyone with minimal fatigue.
- *Size and Space for Approach and Use:* The product is easy to reach, manipulate, and use.

Product Architecture

- The process by which a customer need is developed into a product design.
- Solid architecture improves speed to market, and reduces the cost of changing the product once it is in production.

Product Architecture Illustration

Figure
13.4



Product Architecture and Product Platforms

- Product architecture development is related to establishing a product platform.
- If chunks or modules can be replaced easily within the product architecture, “derivative products” can be made from the same basic platform as technology, market tastes, or manufacturing skills change.

Assessment Factors for an Industrial Design

Figure
13.5

Quality of the user interface

Will the user understand the product and its intended use? Is it safe for use? In a car dashboard design, for example, is it clear that the knobs and switches for lights, wipers, and horn are easy to locate and operate?

Emotional appeal

Is it an attractive, exciting design? Would the prospective owner be proud to own the product? Does the car make a satisfying “growl” when revved up?

Maintenance and repair

Is the procedure for maintenance obvious, and easy? Can all the fluids be easily changed, and is it easy to tell which fluid goes where?

Appropriate use of resources

Does the product include unnecessary features, or does it lack key features? Were the best materials chosen, with regard to cost and quality? Were environmental and ecological factors considered when choosing, for example, types of body paint for the car?

Product differentiation

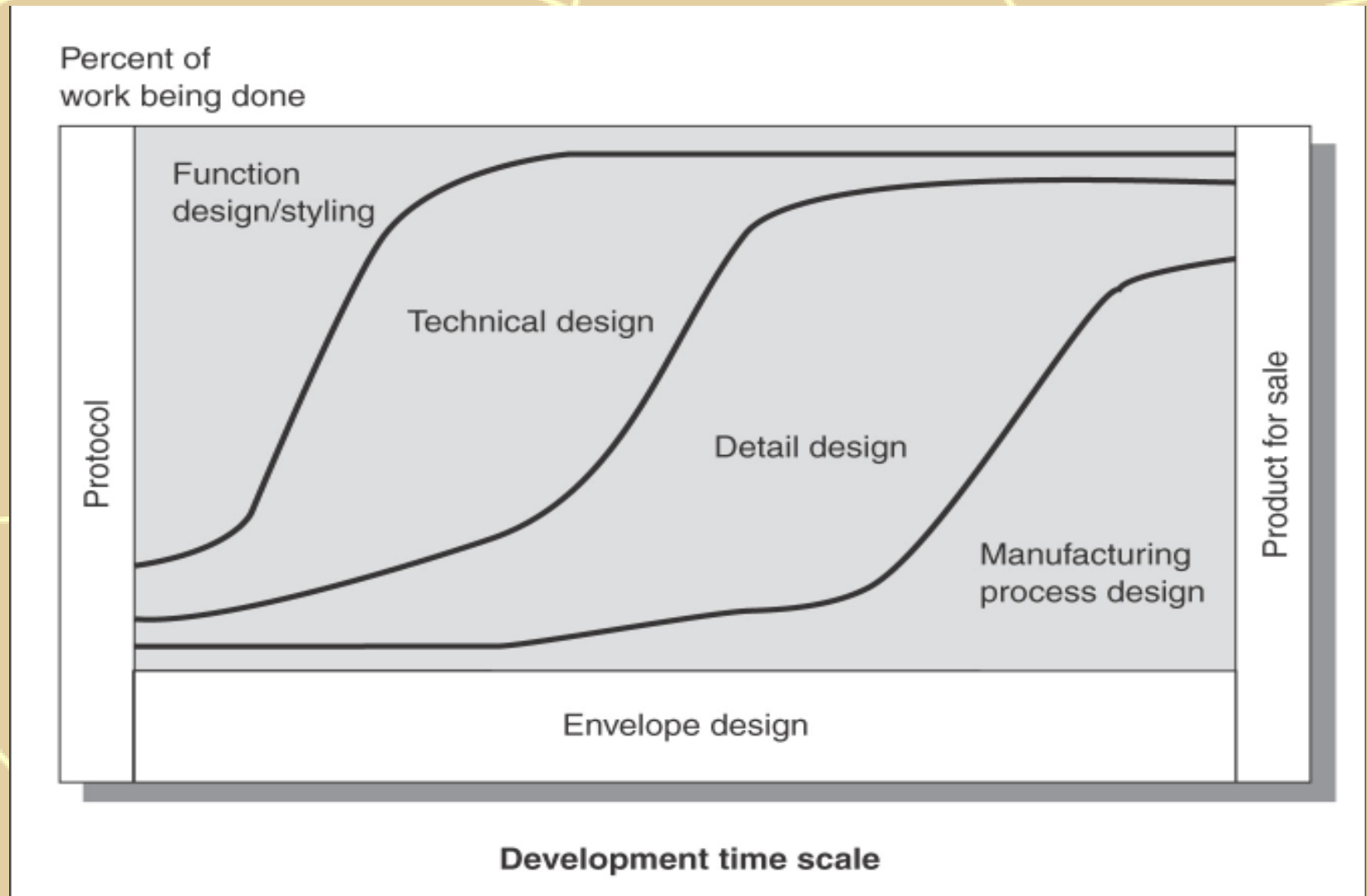
Does the design distinguish the product? Is it memorable? Does it fit with corporate identity? When prospective luxury car owners take a look in the showroom, will they say this new model really stands out?

Prototype Development

- Comprehensive Prototype: complete, fully-functioning, full-size product ready to be examined by customers.
- Focused Prototype: not fully functioning or developed, but designed to examine a limited number of performance attributes or features.

Model of the Product Design Process

Figure
13.6



Improving the Interfaces in the Design Process

- Co-location
- Digital co-location
- Global teams
- Producibility engineer
- Upstream partnering with vendors

Computer-Aided Design (CAD)

- Greatly accelerates the design step and allows assessment of multiple possible designs without building expensive prototypes.
- Design for Manufacturability (DFM): search for ways to minimize manufacturing costs.
- Design for Assembly (DFA): search for ways to ease assembly and manufacture.
- Rational for DFM: A seemingly trivial detail in design phase might have huge manufacturing cost consequences later on!

New Developments in CAD

- Stereolithography (rapid prototyping)
- Mechanical computer-aided engineering (MCAE)

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Chapter 15

Product Use Testing

What is Product Use Testing?

Product use under normal operating conditions.

Some terms:

- Alpha testing: done in-house.
- Beta testing: done at the customer site.

Typical goals of beta testing: to determine if the product works and is free of “bugs.”

The Role of Marketing During Development

- Marketing is involved from the beginning of the new products process.
- Advises the new product team on how the product development fits in with firm's marketing capabilities and market needs.
- Early involvement of marketing increases product's chances for success.
- Think of marketing's task as more information *coordination* than information *gathering*.

Marketing Ramp-Up

- The “I think we’ve got it” phase.
- Once this point is reached, the team’s attitude toward the project changes.
- Marketing’s role increases as marketing people “rev up” their operations.
 - Plan field sales and service availability.
 - Begin work on packaging and branding.
 - Begin work with advertising agency reps.
 - etc.
- Marketing “ramps up” for the product launch.

Arguments Against Product Use Testing

- A fortune has already been spent on the product.
- Market research says the product is a winner.
- Competitor is working on a similar product.
- May suggest lack of faith in product.
- Customers have to learn how to use the product.
- Competitor may steal our idea and beat us to the market.

One Argument For Product Use Testing: Dry Idea Deodorant

Figure
15.1

- Process was anything but linear.
- Gillette discovered flaws in product design through in-house “alpha testing” and beta testing with users.
- Gillette got some surprises in terms of benefits sought -- “back to the drawing board” near end of process! (Luckily, quick fix was available.)

Two More Reasons to Do Product Use Testing

Figure
15.3

- 3M Scotch Brite Never Rust steel wool pads and Never Scratch non-scratching pads.
- Hot Scoop frozen microwaveable chocolate sundaes.

Arguments For Product Use Testing

- Better to build off a technology base that provides some insulation from competitive copying than to worry about such copying.
- Customer needs are complex sets -- use testing would have identified problems with GTE Airfone, Apple Newton, P&G Olestra.
- Delivering a total quality product -- avoiding "horror stories" of poor product quality before product is marketed.

Knowledge Gained From Product Use Testing

Figure
15.4

- Pre-use sense reactions.
- Early use experiences ("Does it work?").
- Major benefits results (beta tests).
- Diagnostic information.

Common Pitfalls of Beta Testing

Figure
15.5

- Beta test site firm has no internal capacity to test the performance of the product at the required level and lacks the funding to hire an outside firm to do the test.
- Developer puts in a wishy-washy performance requirement like "user-friendly" which is meaningless without a measurable specification.
- Testing is done too late in the new products process, which almost ensures that development time will be extended and production delays will occur. Doing testing in increments throughout the process can avoid this pitfall.
- Developers attempt to beta-test their own products. By definition they are too close to the product to critically test it and find problems.
- Developers ignore early negative results, hoping that the product will improve by itself during the new products process. All beta test results, whether positive or negative, need to be honestly evaluated.

Gamma Testing

- Beta testing may not meet all the product developer's requirements.
 - Does the new product meet customers' needs?
 - Is it cost-effective for them?
- Gamma testing involves thorough use and evaluation of the new product by the end user.
- It's an ideal product use test -- but in many cases firms go with beta testing.
 - Cost and time considerations
 - Keeping ahead of competitors

Some Key Testing Dimensions

- User groups to contact (lab personnel, experts, employees, stakeholders).
- Mode of contact (mail vs. personal, individual vs. group, point of use vs. central location).
- Identity disclosure (avoid halo-image effects).
- Degree of use explanation (no comment, some, full explanation).
- Degree of control over use (supervised vs. unsupervised)
- Singularity (monadic usually less sensitive than paired or triangular comparison).

More Key Testing Dimensions

- Duration of use (single use vs. extended periods).
- Source of product (batch, pilot plant, final production).
- Product form (single product vs. variants).
- Mode of recording reaction (like/dislike, preference, descriptive information).
- Source of norms (past experience, market research firms).
- Research service (internal vs. outside personnel).

Types of Product Use Tests

Figure
15.6

| Type | Products | Instructions |
|-------------------|--|--|
| Monadic | The new product alone. | "Try this new toothbrush, and tell me how you like it." |
| Paired comparison | The new product and another one: the market leader, the leader in a key segment, the "best." | "Try these, and tell me how you like them and which you prefer." |
| Triangular | The new product and two others, or two variants of the new product and one other. | Same as above. |

Multiple-product techniques can use side-by-side or staggered (sequential monadic) product-use approaches.

Data Formats: Like/Dislike

Figure
15.7




Like/Dislike

Product A:

1 2 3 4 5

Dislike strongly Dislike some Neutral Like some Like very much

Test product:

Which of these words best describes your overall satisfaction with the test product?
(circle one)

Happy Contented So-so Unhappy Angry

Data Formats:

Preference and Descriptive

Figure
15.7
(cont.)

Preference

What was your preference between the two products?

- ☐ Much prefer C
- ☐ Somewhat prefer C
- ☐ Don't care either way
- ☐ Somewhat prefer M
- ☐ Much prefer M

Descriptive/Diagnostic

For each attribute below, please check your feelings about the test product:

Tastes great |-----| Tastes awful

On which of the following applications would you want to use the new material?

- | | |
|-----------------------------------|--|
| <input type="checkbox"/> Floors | <input type="checkbox"/> Roofs |
| <input type="checkbox"/> Ceilings | <input type="checkbox"/> Inside cabinets |
| <input type="checkbox"/> Walls | <input type="checkbox"/> Other—please specify: _____ |

What changes would you like to see made in the test product?
